Re-evaluation Decision RVD2010-12

Imazethapyr

(publié aussi en français)

18 October 2010

This document is published by the Health Canada Pest Management Regulatory Agency. For further information, please contact:

Publications
Pest Management Regulatory Agency
Health Canada
2720 Riverside Drive
A.L. 6604-E2
Ottawa, Ontario
K1A 0K9

Internet: pmra.publications@hc-sc.gc.ca
healthcanada.gc.ca/pmra
Facsimile: 613-736-3758
Information Service:
1-800-267-6315 or 613-736-3799
pmra.infoserv@hc-sc.gc.ca

Canada

HC Pub: 100535

ISBN: 978-1-100-16948-4 (978-1-100-16949-1)
Catalogue number: H113-28/2010-12E (H113-28/2010-12E-PDF)

© Her Majesty the Queen in Right of Canada, represented by the Minister of Health Canada, 2010

All rights reserved. No part of this information (publication or product) may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in a retrieval system, without prior written permission of the Minister of Public Works and Government Services Canada, Ottawa, Ontario K1A 0S5.

Table of Contents

Overview 1
- Re-evaluation Decision for Imazethapyr 1
- What Does Health Canada Consider When Making a Re-evaluation Decision? 2
- What is Imazethapyr? 2
- Health Considerations 2
- Environmental Considerations 5
- Value Considerations 5
- Measures to Minimize Risk 6

Appendix I Comment and Response 9
References 11

Overview

Re-evaluation Decision for Imazethapyr

After a re-evaluation of the herbicide imazethapyr, Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Regulations, is granting continued registration of products containing imazethapyr for sale and use in Canada.

An evaluation of available scientific information found that, under the revised conditions of use, products containing imazethapyr have value and do not present unacceptable risks to human health or the environment. As a condition of the continued registration of imazethapyr, new risk-reduction measures must be included on the labels of all products. No additional data are required at this time.

The regulatory approach for the re-evaluation of imazethapyr was first presented in Proposed Re-evaluation Decision PRVD2010-02, *Imazethapyr*[1]. This Re-evaluation Decision[2] describes this stage of PMRA's regulatory process for the re-evaluation of imazethapyr, summarizes the Agency's decision and the reasons for it.

Appendix I summarizes the comment received during the consultation process and the PMRA's response to this comment. This decision is consistent with the proposed re-evaluation decision stated in PRVD2010-02, *Imazethapyr*. To comply with this decision, registrants of products containing imazethapyr will be informed of the specific requirements affecting their product registration(s) and of regulatory options available to them.

For more details on the information presented in this Re-evaluation Decision, please refer to the Science Evaluation in the related Proposed Re-evaluation Decision PRVD2010-02, *Imazethapyr*.

---

1 "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

2 "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

What Does Health Canada Consider When Making a Re-evaluation Decision?

The key objective of the *Pest Control Products Act* is to prevent unacceptable risks to people and the environment from the use of pest control products. Health or environmental risk is considered acceptable if there is reasonable certainty that no harm to human health, future generations or the environment will result from use or exposure to the product under its conditions or proposed conditions of registration[3]. The Act also requires that products have value[4] when used according to the label directions. Conditions of registration may include special precautionary measures on the product label to further reduce risk.

To reach its decisions, the PMRA applies rigorous, modern hazard and risk assessment methods and policies. These methods consider the unique characteristics of sensitive subpopulations in both humans (for example, children) and organisms in the environment (for example, those most sensitive to environmental contaminants). These methods and policies also consider the nature of the effects observed and the uncertainties present when predicting the impact of pesticides.

For more information on how the PMRA regulates pesticides, the assessment process and risk-reduction programs, please visit the PMRA section of Health Canada's website at healthcanada.gc.ca/pmra.

What is Imazethapyr?

Imazethapyr is a selective systemic herbicide. It is registered for preplant, pre-emergence or postemergence use on terrestrial food and/or feed crops. Imazethapyr may be used alone or in co-formulation with imazamox or pendimethalin to control a broad spectrum of broadleaf and grassy weeds. It is applied once per year at a rate of 10 to 100 g a.e./ha by ground equipment only.

Health Considerations

Can Approved Uses of Imazethapyr Affect Human Health?

Imazethapyr is unlikely to affect your health when used according to the revised label directions.

Potential exposure to imazethapyr may occur through consuming food and water, working as a mixer/loader/applicator or by entering treated sites. The PMRA considers two key factors when assessing health risks: the dose levels where no health effects occur and the dose levels to which people may be exposed. The dose levels used to assess risks are established to protect the most

---

3 "Acceptable risks" as defined by subsection 2(2) of the *Pest Control Products Act*.

4 "Value" as defined by subsection 2(1) of the *Pest Control Products Act*: "the product's actual or potential contribution to pest management, taking into account its conditions or proposed conditions of registration, and includes the product's (a) efficacy; (b) effect on host organisms in connection with which it is intended to be used; and (c) health, safety and environmental benefits and social and economic impact".

sensitive human population (for example, children and nursing mothers). Only those uses where exposure is well below levels that cause no effects in animal testing are considered acceptable for continued registration.

Toxicology studies in laboratory animals describe potential health effects from varying levels of exposure to a chemical and identify the dose where no effects are observed. The health effects noted in animals occur at doses more than 100-fold higher (and often much higher) than levels to which humans are normally exposed when using imazethapyr products according to label directions.

Imazethapyr belongs to the imidazolinone family of herbicides which demonstrate a very low toxicity profile in mammals due to a plant-specific mode of action. While acute overexposures to imazethapyr resulted in low toxicity by the oral, dermal and inhalation routes, results showed that contact with the eye may cause mild eye irritation. To prevent overexposure, label directions must be followed.

Additional findings in repeat-dose animal studies, including those in pregnant animals, consisted of decreases in some blood parameters, body weight, body-weight gain and food consumption. Overall, there was no concern with respect to carcinogenicity, genotoxicity, neurotoxicity or reproductive toxicity.

When imazethapyr was given to pregnant animals, effects on the developing fetus were only observed at doses that were toxic to the mother, indicating that the fetus is not more sensitive to imazethapyr than the adult animal.

The risk assessment protects against these effects by ensuring that the level of human exposure is well below the lowest dose at which these effects occurred in animal tests.

Residues in Water and Food

Dietary risks from food and water are not of concern.

Reference doses define levels to which an individual can be exposed over a single day (acute) or lifetime (chronic) and expect no adverse health effects. Generally, dietary exposure from food and water is acceptable if it is less than 100% of the acute reference dose or chronic reference dose (acceptable daily intake). An acceptable daily intake (ADI) is an estimate of the level of daily exposure to a pesticide residue that, over a lifetime, is believed to have no significant harmful effects.

Human exposure to imazethapyr from residues in treated crops and drinking water, including the most sensitive subpopulation (children 1–2 years old) was estimated. Only long-term (chronic) exposure estimates were determined for different subpopulations representing different ages, genders and reproductive status. Acute and cancer dietary assessments were not required.

Aggregate chronic exposure (that is, imazethapyr from food and drinking water) represents 8.9% and 43.4% of the chronic reference dose for the general population and children 1–2 years old, respectively, when using drinking water modelling. As a result, chronic risks were below the PMRA's level of concern.

The *Food and Drugs Act* prohibits the sale of adulterated food, that is, food containing a pesticide residue that exceeds the established maximum residue limit (MRL). Pesticide MRLs are established for *Food and Drugs Act* purposes through the evaluation of scientific data under the *Pest Control Products Act*. Each MRL value defines the maximum concentration in parts per million (ppm) of a pesticide allowed in or on certain foods. Food containing a pesticide residue that does not exceed the established MRL does not pose an unacceptable health risk.

Based on metabolism data, the current residue definition in all commodities is the parent compound, imazethapyr (CL 263499 or BAS 685 H) (±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic acid, expressed as ammonium salt.

For this residue definition, MRLs for imazethapyr are currently specified for kidney beans, lima beans, navy beans, pinto beans, runner beans, snap beans, soybeans, tepary beans, wax beans, which have a value of 0.1 ppm, and fenugreek and canola at a value of 0.05 ppm. PMRL2010-29 proposes specific MRLs for all label uses which currently rely on the residue provisions of B.15.002(1) of the Food and Drug Regulations.

Risks in Residential and Other Non-Occupational Environments

Residential and other non-occupational risks are not of concern.

Imazethapyr is not registered for use in any residential areas. Therefore, a non-occupational risk assessment was not required. Basic statements to reduce drift to residential areas are required.

Occupational Risks from Handling Imazethapyr

Occupational risks are not of concern when used according to the label directions.

Based on the precautions and directions for use on the current label and considering the use of appropriate protective equipment, the risk estimates associated with mixing, loading and applying activities meet current standards for all use scenarios and are not of concern. Additional personal protective equipment is not required beyond what is currently specified on the label.

Occupational postapplication risks are not of concern when used according to the revised label directions.

Occupational postapplication risk assessments consider exposures to workers entering treated agricultural sites. Based on the precautions and directions for use on the original product labels reviewed for this re-evaluation, postapplication risk to workers meets current standards and is not of concern. To meet current standards, a minimum 12-hour restricted-entry interval is required for all uses.

Environmental Considerations

What Happens When Imazethapyr Is Introduced Into the Environment?

Imazethapyr is mobile and persistent and poses a potential risk to terrestrial and aquatic vascular plants; therefore, additional risk reduction measures need to be observed.

When imazethapyr is applied for control of weeds in crops, some of it finds its way into soil and water. The chemical is persistent in soil, sediment and water and could carry over. Imazethapyr is mobile and has the potential to leach to groundwater. However, field evidence indicates that imazethapyr remains within the top 15 cm of the soil after application. Water monitoring of ponds and rivers have revealed residues from runoff, but at concentrations below levels of concern for aquatic life. Two major transformation products are formed from the breakdown of imazethapyr in soil and aquatic systems, but their fate in the environment, especially of CL 290395 (Appendix VIII, Diagram 1), has not been fully characterized.

When imazethapyr is used for weed control in crops, there is a potential that sensitive plant species on land and in water may be exposed to the chemical as a result of the spray drift and runoff. Some of these species are sensitive to the chemical and would be adversely affected. In order to mitigate effects in non-target areas, spray buffer zones between the agricultural field and the non-target terrestrial or aquatic areas are required. The width of these buffer zones will be specified on the product label. Imazethapyr presents negligible risk to wild birds, mammals, bees, earthworms, fish, amphibians, aquatic invertebrates and algae because concentrations in the environments are expected to be at levels that are not harmful.

Value Considerations

What is the Value of Imazethapyr?

Imazethapyr continues to contribute to weed management in a variety of crops when used in accordance with the label directions.

Several major crops including canola, corn and lentils have been modified through mutagenesis followed by conventional breeding and selection to acquire imazethapyr tolerant traits (CLEARFIELD® traits). Imazethapyr has also been widely used in soybeans, field peas and

processing peas. It is the only herbicide registered for the control of broadleaf weeds in chickling vetch and fenugreek. Moreover, imazethapyr is the only alternative for the control of grassy weeds in chickling vetch and fenugreek. Imazethapyr controls both grassy and broadleaf weeds in adzuki beans, lima beans, snap common beans and dry common beans while alternatives only control either grassy or broadleaf weeds. Although imazethapyr plays a role in mitigating resistance development in weeds to other herbicide groups, consideration has to be given to resistance management as more weed species are reported to be resistant to herbicides that inhibit acetolactate synthase (such as imazethapyr) than to herbicides having other modes of action.

Measures to Minimize Risk

The labels of registered pesticide products include specific instructions for use. Directions include risk-reduction measures to protect human and environmental health. These directions must be followed by law. As a result of the re-evaluation of imazethapyr, the PMRA is requiring further risk-reduction measures for product labels.

Additional Key Risk-Reduction Measures

Human Health

- To protect workers entering treated fields, a 12-hour restricted-entry interval is required for all formulations.
- Precautionary statements are required to avoid drift to areas of human habitation or areas of human activity.

Environment

- Updated precautionary statements and terrestrial and minimal aquatic buffer zones (1 m) are required for the protection of terrestrial and aquatic habitats that may contain sensitive plant species.

Other Information

The risk assessments found in the PRVD2010-02, *Imazethapyr*, serves as an evaluation report. The relevant test data on which the re-evaluation decision is based on are available for public inspection, upon application, in the PMRA's Reading Room (located in Ottawa, ON, Canada). For more information, please contact the PMRA's Pest Management Information Service.

Any person may file a notice of objection[5] regarding this decision on imazethapyr within 60 days from the date of publication of this Re-evaluation Decision. For more information regarding the basis for objecting (which must be based on scientific grounds), please refer to the Pesticides and Pest Management portion of Health Canada's website, Request a Reconsideration of Decision, or contact the PMRA's Pest Management Information Service.

[5] As per subsection 35(1) of the *Pest Control Products Act*.

Appendix I Comment and Response

1.0 Comment on the Use of Milk Residues in the Dietary Exposure Assessment

The registrant requested clarification of the anticipated residue estimate for milk used in the dietary exposure assessment, as the livestock feeding studies for imazethapyr demonstrated that there was no detectable transfer of residue from feed to edible tissues.

Response

When performing an aggregate (food and water) risk assessment, PMRA routinely considers potential dietary exposure from residues in milk and other animal commodities that may result from the use of treated feeds and forage. Refinement of the residue data is applied following established scientific methods until the risk assessment falls below the level of concern or until no more refinement steps are available. When the risk estimate falls below the level of concern, PMRA can conclude that the use of the pesticide according to the label instructions does not result in any aggregate risk concerns. Further refinement of the aggregate exposure assessment beyond this point is generally not considered.

In the aggregate (food and water) risk assessment for imazethapyr, presented in PRVD2010-02, no risk concerns were identified from the usage of imazethapyr and therefore, no further refinements were warranted. However, it is acknowledged that the residue estimate in milk was the major contributor to aggregate exposure. In order to address the comment made, the exposure estimate has been revised based on refined animal residues from the livestock metabolism and feeding studies, and is now determined to be between 0.2 and 0.6 % of the ADI for the general population and the most exposed subpopulation – infants <1 year of age, respectively. It should be noted that the revised exposure estimate does not change the conclusion of the initial risk assessment.

References

A. Information Considered for the Chemistry Assessment

Studies/Information Submitted By Applicant/Registrant (Unpublished)

PMRA Document Number: 1468387
Reference: 1987, Pesticide Assessment Guidelines and Subdivision Product Chemistry Description of Beginning Materials and Manufacturing Process for the Manufacturing-Use Product AC 263499 Section 61-2, US-MRID40429401, MRID: 40429401, Data Numbering Code: 2.11.2, 2.11.3 Confidential Business Information.

PMRA Document Number: 1468396
Reference: 2000, Chemical Composition Data for AC 263499 Imazethapyr Technical Grade Active Substance (2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)-5-ethyl nicotinic acid) to Support Registration in Canada, APBR 1121, MRID: N/A, Data Numbering Code: 2.13.1, 2.13.2, 2.13.3 Confidential Business Information.

PMRA Document Number: 1468401
Reference: 1998, Composition and Identification of AC 263499 Imazethapyr Technical Grade Active Substance 2-4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl-5-ethyl nicotinic acid for Reregistration in Argentina, APBR 951, MRID: N/A, Data Numbering Code: 2.13.3 Confidential Business Information.

PMRA Document Number: 1468402
Reference: 1987, Physical and Chemical Characteristics for the Manufacturing-Use Product, AC 263,499, US-CHDV Volume 27 Report No. 10, MRID: N/A, Data Numbering Code: 2.14.1, 2.14.10, 2.14.11, 2.14.13, 2.14.14, 2.14.2, 2.14.3, 2.14.4, 2.14.5, 2.14.6, 2.14.7, 2.14.8, 2.14.9 Confidential Business Information.

PMRA Document Number: 1469166
Reference: 1990, Comparison of the Chemical Composition of Typical Current Large Scale Production of Technical Grade Active Ingredient CL 263,499 in Pursuit Herbicide Produced at the Hannibal Manufacturing Facility with the Chemical Composition Established from Pilot Plant. Data Numbering Code: 2.13.3 Confidential Business Information.

PMRA Document Number: 1469174
Reference: 1991, Imazethapyr (PURSUIT) Technical Active Ingredient Product Chemistry Data for Agriculture Canada, Data Numbering Code: 2.11.3, 2.13.1, 2.13.3, 2.13.4 Confidential Business Information.

PMRA Document Number: 1706013
Reference: 1988, Technical Chemistry file IMP-QUA-2. Analytical Data and Methodology, Chemical and Physical Properties - UV Visible Absorption Spectrum, Data Numbering Code: 2.13.1, 2.13.2, 2.13.3, 2.13.4, 2.14.2 Confidential Business Information.

B. Information Considered for the Toxicological Risk Assessment

Studies/Information Provided by Applicant/Registrant (Unpublished)

PMRA Document Number: 1226693
Reference: 1985, AC 263, 499: Acute Dermal Toxicity Study in Albino Rabbits, Data Numbering Code: 4.2.2

PMRA Document Number: 1226695
Reference: 1985, AC 263, 499: Eye Irritation Study in Albino Rabbits, Data Numbering Code: 4.2.4

PMRA Document Number: 1226684
Reference: 1985, AC 263,499: Acute Oral LD50 Study in Albino Rabbits, Data Numbering Code: 4.2.1

PMRA Document Number: 1226639
Reference: 1985, AC 263,499: Guinea Pig Dermal Sensitization Study, Data Numbering Code: 4.2.6

PMRA Document Number: 1226696
Reference: 1985, AC 263,499: Skin Irritation Study in Albino Rabbits, Data Numbering Code: 4.2.5

PMRA Document Number: 1226694
Reference: 1985, Acute Inhalation Toxicity, Single Level, 4-hour Exposure - Rats, Data Numbering Code: 4.2.3

PMRA Document Number: 1226035
Reference: 1985, Appendix to Final Report - A Teratology Study with AC 263,499 In Rabbits, Data Numbering Code: 4.5.3

PMRA Document Number: 1226643
Reference: 1985, Bacterial/Microsome Reverse Mutation (Ames) Test on AC 263,499, Data Numbering Code: 4.5.4

PMRA Document Number: 1236459
Reference: 1985, Clastogenic Evaluation of AC 263,499 Lot # AC 4570-141 in an In Vitro Cytogenetic Assay Measuring Chromosomal Aberration Frequencies in Chinese Hamster Ovary (CHO) Cells, Data Numbering Code: 4.5.4

PMRA Document Number: 1236463
Reference: 1987, Chronic Dietary Toxicity and Oncogenicity Study with AC 263,499 in Rats, Final Report. Data Numbering Code: 4.4.1, 4.4.2

PMRA Document Number: 1236464
Reference: 1987, Chronic Dietary Toxicity and Oncogenicity Study with AC 263,499 in Rats, Final Report. Data Numbering Code: 4.4.1, 4.4.2

PMRA Document Number: 1226646
Reference: 1985, Dominant Lethal Study with AC 263,499 in Rats, Data Numbering Code: 4.5.4

PMRA Document Number: 1226650
Reference: 1985, Herbicide AC 263,499: The Absorption, Excretion, Tissue Residues, and Metabolism of Carbon-14 Labelled AC 263,499 In the Rat, Data Numbering Code: 4.5.9,6.4

PMRA Document Number: 1226644
Reference: 1985, Rat Hepatocyte Primary Culture/DNA Repair Test, Data Numbering Code: 4.5.4

PMRA Document Number: 1226697
Reference: 1985, Appendix to Final Report – A Teratology Study with AC 263,499 in Rabbits, Data numbering Code: 4.5.3

PMRA Document Number: 1226033
Reference: 1985, Teratology Study with AC 263,499 in Rats, Data Numbering Code: 4.5.2

PMRA Document Number: 1226027
Reference: 1985, Twenty-one Day Dermal Toxicity Study - Rabbits, Data Numbering Code: 4.3.4

PMRA Document Number: 1236457
Reference: 1986, (AC 263,499) Acute in Vivo Cytogenetics Assay in Rats. Final Report, Data Numbering Code: 4.5.4

PMRA Document Number: 1236458
Reference: 1986, (AC 263,499) Test For Chemical Induction of Gene Mutation at the Hgprt Locus in Cultured Chinese Hamster Ovary (CHO) Cells with and without Metabolic Activation, Data Numbering Code: 4.5.4

PMRA Document Number: 1226034
Reference: 1986, A Teratology Study with AC 263,499 In Rabbits, Data Numbering Code: 4.5.3

PMRA Document Number: 1226692
Reference: 1986, AC 263, 499: Toxicology Report Ax85-1 A 13-week Rat Feeding Study. Experiment L-2139., Data Numbering Code: 4.3.1

PMRA Document Number: 1236454
Reference: 1986, Summary - AC 263,499 Rat Oral LD50, Data Numbering Code: 4.2.1

PMRA Document Number: 1619943
Reference: 1986, Summary Of Experimental Results - Rat Oral LD50 CL 288,511, Data Numbering Code: 4.2.1

PMRA Document Number: 1226029
Reference: 1986, Two-generation (two-litter) Reproduction Study with AC 263, 499 in Rats (Vol. 1 of V), Data Numbering Code: 4.5.1

PMRA Document Number: 1226030
Reference: 1986, Two-generation (two-litter) Reproduction Study with AC 263, 499 in Rats (Vol. III of V), Data Numbering Code: 4.5.1

PMRA Document Number: 1226031
Reference: 1986, Two-generation (two-litter) Reproduction Study with AC 263, 499 in Rats (Vol. IV of V), Data Numbering Code: 4.5.1

PMRA Document Number: 1226032
Reference: 1986, Two-generation (two-litter) Reproduction Study with AC 263, 499 in Rats (Vol. V of V), Data Numbering Code: 4.5.1

PMRA Document Number: 1236455
Reference: 1987, (AC 263,499) Dietary Toxicity Study in Beagle Dogs, Data Numbering Code: 4.3.2

PMRA Document Number: 1236449
Reference: 1987, Chronic Dietary Toxicity and Oncogenicity Study with AC 263,499 in Mice. Final Report, Data Numbering Code: 4.4.1, 4.4.2

PMRA Document Number: 1236451
Reference: 1987, Chronic Dietary Toxicity and Oncogenicity Study with AC 263,499 in Rats. Final Report, Data Numbering Code: 4.4.1, 4.4.2

PMRA Document Number: 1130307
Reference: 1987, Pursuit Herbicide (AC 263,499): Study of the Absorption, Excretion, and Metabolism in Rats Receiving an Oral Dose of About 1000 Mg/kg Carbon-14 Labelled AC 263,499, Data Numbering Code: 4.5.9,6.4

PMRA Document Number: 1468439
Reference: 1989, Imazethapyr Herbicide (AC 263,499): The Absorption, Distribution, Elimination and Metabolism of Carbon-14 Labelled AC 263,499 in the Laboratory Rat, Data Numbering Code: 4.5.9

PMRA Document Number: 1619942
Reference: 1991, Rat Oral LD50 Study with AC 288,511, Data Numbering Code: 4.2.1

PMRA Document Number: 1226641
Reference: 91-day Dietary Toxicity Study in Purebread Beagle Dogs with AC 263,499. Homogeneity and Stability of AC 263,499 in Canine Meal for A Ninety-one-day Dog Toxicity Study. Analysis of Weekly Feed Samples from A Ninety-One-day Dog Toxicity Study. Validation of HPLC Method M-1585 for the Determination of AC 263,499 in Purina Certified 5002 Rodent And 5007 Canine Diet Meal, Data Numbering Code: 4.3.2

PMRA Document Number: 1226661
Reference: Summaries - Acute Oral LD50 Study In Albino Rabbits and Albino Mice, Acute Dermal Toxicity Study in Albino Rabbits, Acute Inhalation Rats, Eye and Skin Irritation Albino Rabbits, Dermal Sensitization Study in Guinea Pigs, 91-day Dietary Study in Purebred Beagle Dogs, Bacterial/Microsome Reverse Mutation (Ames) Test, Rat Hepatocyte Primary Culture/DNA Repair Test, Dominant Lethal Study in Rats, Data Numbering Code 4.1

Additional Information Considered

Published Information

PMRA Document Number **Reference**

PMRA Document Number: 1728447
Reference: 2009, Koutros et al., Heterocyclic Aromatic Amine Pesticide Use and Human Cancer Risk: Results from the U.S. Agricultural Health Study - Int. J. Cancer: 124, 1206-1212. Data Numbering Code: 4.8.

C. Information Considered for the Occupational Risk Assessment

Additional Information Considered

Published Information

Data Numbering Code: 926601
Reference: US EPA, 2002. ID#s - 6F04746 (Nongrass Animal Feed Crop Group), IE06286 (Import Tolerance; Imidazolinone-tolerant Canola) and 0F0 Health Effects Division (HED) Risk Assessment for Imazethapyr. US EPA Office of Prevention, Pesticides and Toxic Substances, Washington, DC. April 23, 2002. Data Numbering Code: 12.5.

D. Information Considered for the Dietary Risk Assessment

Studies/Info Provided by the Applicant/Registrant (Unpublished)

PMRA Document Number: 1146689
Reference: (Imazethapyr/2AS): Residues of CL263,499 in Green Peas (Succulent and Dry) (c-3149;09414;0185;pu-88-wa-02(6950);1808)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1146682
Reference: (Imazethapyr/2AS): Residues of CL263,499 in Green Peas (Succulent and Dry)(c-3174;09414;0185;pu-88-mn-05(7054);1831)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1146683
Reference: (Imazethapyr/2AS): Residues Of CL263,499 in Green Peas (Succulent And Dry)(c-3177;09414;0185;pu-88-md-01(7149);1851)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1146687
Reference: (Imazethapyr/2AS): Residues of CL263,499 in Green Peas (Succulent and Dry)(c-3181;09414;0185;pu-88-mn-01(7056);1841)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1146681
Reference: (Imazethapyr/2AS): Residues of CL263,499, CL288,511 and Cl182,704 in Field Pea Vine, Hay, Straw, Pod and Dry Pod (c3849;0952;7816;0185)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1156312
Reference: (Imazethapyr/2AS): Validation of GC Method M1981 for the Determination of CL263,499 and CL288,511 Residues in Field Corn (c3355;09412;pu90pt01;0462)(Pursuit), Data Numbering Code: 6.3

PMRA Document Number: 1156314
Reference: (Imazethapyr/2AS): Validation of GC Method Sop M1984 for the Determination of Cl182,704 Residues in Field Corn (c3556;09412;pu90pt16;0462)(Pursuit), Data Numbering Code: 6.3

PMRA Document Number: 1146691
Reference: (Imazethapyr/zas): Residues of CL263,499 in Green Peas (Succulent and Dry) (c-3158;09414;0185;pu-88-md-03(7150);1816)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1146684
Reference: (Imazethapyr/zas): Residues of CL263,499 in Green Peas (Succulent and Dry)(c-3178;09414;0185;pu-88-wi-04(7038);1843)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1146685
Reference: (Imazethapyr/zas): Residues of CL263,499 in Green Peas (Succulent and Dry)(c-3179;09414;0185;pu-88-wa-01(6944);1842)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1226653
Reference: 1985, AC 263,499: Determination of Carbon-14 Labelled AC 263,499 (+)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic Acid, Derived Residues in Blood, Eggs and Tissues of Laying Hens. Ac5022;ac5024, Data Numbering Code: 6.2

PMRA Document Number: 1226656
Reference: 1985, CL 263,499: Validation of GC Method M-1586 for the Determination of CL 263,499 Residues in Soybean Plant, Seed and Straw, Data Numbering Code: 7.2.1, 7.2.2

PMRA Document Number: 1469295
Reference: 1985, Herbicide AC 263,499: Carbon-14 Labelled AC 263,499 (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic Acid) Derived Residues in Lactating Goats, Data Numbering Code: 6.2

PMRA Document Number: 1226651
Reference: 1985, Herbicide AC 263,499: Carbon-14 Labelled AC 263,499 (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic Acid) Derived Residues In Lactating Goat. Ac5022, Data Numbering Code: 6.2

PMRA Document Number: 1226659
Reference: 1986, CL 263,499 (IPA-AC): Residues of CL 263,499 in Soybean Seed and Straw (Post, PPI, PE; MN, 1984) (c-2630), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1226657
Reference: 1986, CL 263,499 (IPA-AC): Residues of CL263,499 In Soybean Plants, Seed and Straw (Post, PPI, PE; Il, 1984) (c-2630), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1226658
Reference: 1986, CL 263,499 (IPA-AC): Residues Of CL263,499 in Soybean Seed and Straw (Post, PPI, PE; MN, 1984) (c-2630), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1226652
Reference: 1986, Herbicide AC 263, 499: Metabolism of Cabon-14 Labelled AC 263, 499 in Soybeans, Data Numbering Code: 6.3

PMRA Document Number: 1784705
Reference: 1987, Pursuit Herbicide (AC 263,499): Pyridine-6 Carbon-14 AC 263,499-derived Residues in Soybeans after Postemergence Treatment At 0.5 Lb ae/a, Data Numbering Code: 6.3 Confidential Business Information

PMRA Document Number: 1784719
Reference: 1987, Pursuit Herbicide (AC 263,499): Residual Radioactivity in Corn Grown as a Follow Crop in Soil Containing AC 263,499-derived Residues at Clayton, North Carolina (1986 To 1987), Data Numbering Code: 7.4.3 Confidential Business Information

PMRA Document Number: 1784718
Reference: 1987, Pursuit Herbicide (AC 263,499): Residues of AC 263,499 in Hybrid Pioneer Corn Grown in Soil Treated with Pyridine-6 Carbon-14 Labelled Compound [4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic acid, Data Numbering Code: 7.4.3, Confidential Business Information.

PMRA Document Number: 1469520
Reference: 1987, Confidential Business Information Reference Sheet - Pursuit(r) Herbicide (AC 263499): Residual Radioactivity in Corn Grown as a Follow Crop in Soil Containing AC 263499-derived Residues at Clayton NC (1986-1987), Data Numbering Code: 7.4.3 Confidential Business Information

PMRA Document Number: 1469515
Reference: 1987, Pursuit - Herbicide (AC 263,499): Residues of AC 263,499 in Hybrid Pioneer Corn Grown in Soil Treated with Pyridine-6 Carbon-14 Labelled Compound (+)-(2-(4,5-dihydro-4-methylethyl) -5-oxo-1H-imidazol-2-yl)-5-ethyl-3-pyridinecarboxylic Acid, Data Numbering Code: 7.4.3.

PMRA Document Number: 1469518
Reference: 1987, Pursuit (r) Herbicide (AC 263499): Residual Radioactivity in Follow Crops (Wheat and Corn) Grown In Soil Containing AC 263499-derived Residues at Lexington Kentucky (1986-1987), Data Numbering Code: 7.4.3

PMRA Document Number: 796060
Reference: 1987, Pursuit Herbicide (AC 263,499): Metabolism of Carbon-14 AC 263,499 Herbicide in Green Beans Under Field Conditions, Data Numbering Code: 6.3

PMRA Document Number: 796070
Reference: 1987, Pursuit Herbicide (AC 263,499): Pyridine-6 Carbon-14 AC 263,499-derived Residues in Soybeans after Postemergence Treatment At 0.5 Lb ae/a, Data Numbering Code: 6.3

PMRA Document Number: 796055
Reference: 1987, Pursuit Herbicide (AC 263,499): Residual Radioactivity in Corn Grown as a Follow Crop in Soil Containing AC 263,499-derived Residues at Clayton, North Carolina (1986 To 1987), Data Numbering Code: 7.4.3

PMRA Document Number: 796054
Reference: 1987, Pursuit Herbicide (AC 263,499): Residual Radioactivity in Follow Crops (Wheat and Corn) Grown in Soil Containing AC 263,499-derived Residues at Lexington, Kentucky (1986 To 1987), Data Numbering Code: 7.4.3

PMRA Document Number: 796053
Reference: 1987, Pursuit Herbicide (AC 263,499): Residual Radioactivity in Follow Crops (Wheat and Corn) Grown in Soil Containing AC 263,499-derived Residues at Princeton, New Jersey (1986 To 1987), Data Numbering Code: 7.4.3

PMRA Document Number: 796052
Reference: 1987, Pursuit Herbicide (AC 263,499): Residues of AC 263,499 in Hybrid Pioneer Corn Grown in Soil Treated with Pyridine-6 Carbon-14 Labelled Compound [4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic Acid, Data Numbering Code: 7

PMRA Document Number: 1226367
Reference: 1987, Pursuit Herbicide (CL 263, 499): Freezer Storage Stability of CL 263, 499 Residues in Green Soybean Plant, Seed & Straw (C-2913), Data Numbering Code: 7.3

PMRA Document Number: 1469352
Reference: 1987, Pursuit Herbicide (CL 263,499): Freezer Storage Stability of CL 263,499 Residues in Green Soybean Plant, Seed and Straw (C-2630), Data Numbering Code: 7.3

PMRA Document Number: 1469377
Reference: 1987, Pursuit Herbicide (CL 263,499/as): Residues of CL 263,499 in Soybeans (Post; GA, 1986) (C-2630), Data Numbering Code: 7.4.1

PMRA Document Number: 1469376
Reference: 1987, Pursuit Herbicide (CL 263,499/as): Residues of CL 263,499 in Soybeans (Post; KY, 1986) (c-2630), Data Numbering Code: 7.4.1

PMRA Document Number: 1469519
Reference: 1987, Pursuit(r) Herbicide (AC 263499): Residual Radioactivity in Corn Grown as a Follow Crop in Soil Containing AC 263499-derived Residues at Clayton NC (1986-1987), Data Numbering Code: 7.4.3

PMRA Document Number: 1146688
Reference: 1988, (Imazethapyr): Validation of GC Method M-1855 for the Determination of CL263,499 Residues in Succulent and Dry Beans and Peas (legume Vegetables), Data Numbering Code: 7.4.2

PMRA Document Number: 1146690
Reference: 1988, (Imazethapyr/zas): Residues of CL263,499 in Green Peas (Succulent and Dry) (c-3150;09414;0185;pu-88-wi-05(7058);1807)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1230960
Reference: 1988, CL 263,499 (Imazethapyr): Validation of GC Method M-1879 for the Determination of CL263,499 Residues In Corn Tissues (Grain, Plant and Fodder), Data Numbering Code: 7.2.1,7.4.2

PMRA Document Number: 1469525
Reference: 1988, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Corn Silage (PPI, Post; II, 1987), Data Numbering Code: 7.4.4

PMRA Document Number: 1469523
Reference: 1988, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Corn Silage, Fodder and Grain (PPI, Post; IA, 1987), Data Numbering Code: 7.4.4

PMRA Document Number: 1469521
Reference: 1988, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Corn Silage, Fodder and Grain (PPI, Post; IN, 1987), Data Numbering Code: 7.4.4

PMRA Document Number: 1469522
Reference: 1988, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Corn Silage, Fodder and Grain (PPI, Post; MN, 1987), Data Numbering Code: 7.4.4

PMRA Document Number: 1469524
Reference: 1988, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Corn Silage, Fodder, and Grain (PPI, Post; MO, 1987), Data Numbering Code: 7.4.4

PMRA Document Number: 1142236
Reference: 1988, CL 263,499 Imazethapyr: Validation of GC Method M-1855 for the Determination of CL 263,499 Residues in Succulent and Dry Beans and Peas (legume Vegetables), Data Numbering Code: 7.2.1

PMRA Document Number: 1232956
Reference: 1988, GC/MS Confirmatory Method for CL 263,499 Residues in Soybean Seed, Data Numbering Code: 7.2.1

PMRA Document Number: 1784703
Reference: 1989, CL 263,499: Metabolism of Carbon-14 Labelled CL 263,499 in Peanuts, Data Numbering Code: 6.3 Confidential Business Information

PMRA Document Number: 1469343
Reference: 1989, CL 263,499 (Imazethapyr): Validation of GC Method M-1586 for the Determination of CL 263,499 Residues in Soybean Seed, Data Numbering Code: 7.2.3

PMRA Document Number: 796069
Reference: 1989, CL 263,499: Metabolism of Carbon-14 Labelled CL 263,499 in Peanuts, Data Numbering Code: 6.3

PMRA Document Number: 1784704
Reference: 1990, CL 263,499: Carbon-14 CL 263,499-derived Residues in Corn Following Postemergence Treatment At 0.25 Lb ae/a, Data Numbering Code: 6.3 Confidential Business Information

PMRA Document Number: 1784717
Reference: 1990, Imazethapyr Herbicide (CL 263,499): Residues and Metabolism of Carbon-14 Labelled CL 263,499 in Corn, Data Numbering Code: 7.4.2 Confidential Business Information

PMRA Document Number: 1469441
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; PA, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469416
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Field Corn (Post; II, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469414
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288, 511 in Field Corn (PPI; WI, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469417
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PE; II, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469439
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PE; IN, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469436
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PE; NE, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469499
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (Post; MI, 1989), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1469492
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (Post; MN, 1989), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1469507
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (Post; NE, 1989), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1469494
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (Post; OH, 1989), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1469498
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (Post; WI, 1989), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1469434
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; IA, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469428
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; IL, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469415
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; MI, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469437
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; MN, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469429
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; NE, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469440
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Field Corn (PPI; OH, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469374
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Soybeans (Post; AR, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469371
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Soybeans (Post; GA, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469375
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Soybeans (Post; IL, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469372
Reference: 1990, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 in Soybeans (Post; OH, 1989), Data Numbering Code: 7.4.1

PMRA Document Number: 1469496
Reference: 1990, CL 263,499 Iimazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Field Corn (Post; IL, 1989), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 796072
Reference: 1990, CL 263,499: Carbon-14 CL 263,499-derived Residues in Corn Following Postemergence Treatment At 0.25 Lb ae/a, Data Numbering Code: 6.3

PMRA Document Number: 1231266
Reference: 1990, CL288,511: Residues in Blood, Eggs And Tissues of Laying Hens Fed with Carbon-14 CL 288,551, Data Numbering Code: 7.5

PMRA Document Number: 1231243
Reference: 1990, Crop Residue Study - Summary - Imazethapyr Herbicide (CL 263,499): Residues and Metabolism Of Carbon-14 Labelled CL 263,499 in Corn. CL 288,511: Residues in Blood, Eggs and Tissues of Laying Hens Fed with Carbon-14 CL 288,511, Data Numbering Code: 7.1

PMRA Document Number: 921921
Reference: 1990, Imazethapyr (CL 263,499): Characteristics of Imazethapyr and its Hydroxy/hydroxy-glucose Metabolites Through FDA Multiresidue Methods, Data Numbering Code: 7.2.4

PMRA Document Number: 1236825
Reference: 1990, Imazethapyr (CL 263,499): Validation of GC Method Sop M1993 for the Determination of CL 263,499 and CL 288,511 Residues in Soybean Seed, Data Numbering Code: 7.2.1

PMRA Document Number: 1231254
Reference: 1990, Imazethapyr Herbicide (CL 263,499): Residues and Metabolism of Carbon-14 Labelled CL 263,499 in Corn, Data Numbering Code: 7.4.2

PMRA Document Number: 1469506
Reference: 1991, CL 263,499 (Imazethapyr): Residues of CL 263,499 and its Metabolites CL 288,511 and CL 182,704 in Field Corn Following A Postemergence Broadscast Applicaion of Pursuit 2AS Herbicide (Post; MO; 1990), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1146333
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Corn Forage, Silage, Graln and Fodder (Post NE 1990), Data Numbering Code: 7.1

PMRA Document Number: 1469526
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 and CL 288,511 in Corn Grain and Processed Grain (Post; NE, 1990), Data Numbering Code: 7.4.5

PMRA Document Number: 1078392
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; NY, 1991), Data Numbering Code: 7.4.1

PMRA Document Number: 1142240
Reference: 1991, Imazethapyr (CL 263,499): Residues of CL 263,499 and CL 228,511 in Soybean Seed, Data Numbering Code: 7.4.2

PMRA Document Number: 1469328
Reference: 1991, Imazethapyr (CL 263,499): Validation of GC Method M2143 for the Determination of CL 263,499 and CL 288,511 (Hydroxy Metabolite) Residues in Corn Meal and Corn Oil, Data Numbering Code: 7.2.1

PMRA Document Number: 1469345
Reference: 1992, CL 263,499 (Imazethapyr Herbicide): Independent Laboratory Validation of GC Method M1981 for the Determination of CL 263,499 and CL 288,511 Residues in Corn Forage, Corn Grain and Corn Fodder by ABC Laboratories, Inc, Data Numbering Code: 7.2.3

PMRA Document Number: 1469420
Reference: 1992, CL 263,499 (Imazethapyr): Residues of CL 263,499 and its Metabolite CL 288,511 in Field Corn Following a Preplant Incorporated Application of Pursuit 2AS (PPI; SD; 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469424
Reference: 1992, CL 263,499 (Imazethapyr): Residues of CL 263,499 and its Metabolite CL 288,511 in Field Corn Following a Preplant Incorporated Application of Pursuit 2AS Herbicide (PPI; IA; 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469418
Reference: 1992, CL 263,499 (Imazethapyr): Residues of CL 263,499 and its Metabolite CL 288,511 in Field Corn Following a Preplant Incorporated Application of Pursuit 2AS Herbicide (PPI; NE; 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469422
Reference: 1992, CL 263,499 (Imazethapyr): Residues of CL 263,499 and its Metabolite CL 288,511 in Field Corn Following a Preplant Incorporated Application of Pursuit 2AS Herbicide, Data Numbering Code: 7.4.1

PMRA Document Number: 1469426
Reference: 1992, CL 263,499 (Imazethapyr): Total Residues of CL 263,499 and CL 288,511 in Corn Forage, Silage, Grain and Fodder (PPI; MO, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1064079
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa (Post; CN, 1990) (Report Amendment #1), Data Numbering Code: 7.4.1

PMRA Document Number: 1469509
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post, NY, 1991), Data Numbering Code: 7.4.1, 7.4.5

PMRA Document Number: 1469513
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; MI, 1991), Data Numbering Code: 7.4.1, 7.4.5

PMRA Document Number: 1469512
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; ND, 1991), Data Numbering Code: 7.4.1, 7.4.5

PMRA Document Number: 1469510
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; WI, 1991), Data Numbering Code: 7.4.1, 7.4.5

PMRA Document Number: 1078393
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; WI, 1991), Data Numbering Code: 7.4.1

PMRA Document Number: 1469364
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Seed (Post; CA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469366
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Seed (Post; WA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1078396
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511, CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; MI, 1991), Data Numbering Code: 7.4.1

PMRA Document Number: 1078395
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511, CL 182,704 in Alfalfa Green Forage, Hay and Process Meal (Post; ND, 1991), Data Numbering Code: 7.4.1

PMRA Document Number: 1064071
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 In Alfalfa (Post; NY, 1990) (Report Amendment #1), Data Numbering Code: 7.4.1

PMRA Document Number: 1064075
Reference: 1992, CL 288,511: Metabolic Fate of Carbon-14 CL 288,511 in the Milk and Edible Tissues of Lactating Goats, Data Numbering Code: 6.2

PMRA Document Number: 796061
Reference: 1992, CL 288,511: Residues in Blood, Eggs and Tissues of Laying Hens Dosed with Carbon-14 Labelled CL 288,511, Data Numbering Code: 6.2

PMRA Document Number: 1064076
Reference: 1992, Cl.288,511: Residues in Blood, Eggs and Tissues of Laying Hens Dosed with Carbon-14 Labeled CL 288,511, Data Numbering Code: 6.2

PMRA Document Number: 1469463
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa (Post; CA, 1990), Data Numbering Code: 7.4.1,7.4.2

PMRA Document Number: 1469483
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa (Post; IA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469475
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa (Post; SD, 1990), Data Numbering Code: 7.4.1, 7.4.2

PMRA Document Number: 1469363
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa Seed (Post; CA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469455
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Alfalfa (Post; NY, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469479
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 In Alfalfa (Post; WI, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1146680
Reference: 1992, Summaries: CL 263,499 (Iazethapyr/2AS): Residues of CL 263,499, CL 288, Sil and CL 182,784 in Field Pea Vine, Hay, Straw, Pod and Dry Pod (Post; CN; 1991) American Cyanamid, Data Numbering Code: 7.1

PMRA Document Number: 796071
Reference: 1995, CL 263,499: Carbon-14 CL 263,499-derived Residues in Corn Following Postemergence Treatment at 0.25 lbs ae/a (report Amendment No. 2), Data Numbering Code: 6.3

PMRA Document Number: 1469338
Reference: 1995, CL 263,499: Laboratory Validation of GC Method M2422 For the Determination of CL 263,499 and CL 288,511 Residues in Canola Oil and Meal by Huntingdon Analytical Services, Inc, Data Numbering Code: 7.2.1, 7.2.2, 7.2.3

PMRA Document Number: 1469391
Reference: 1995, Crop Rate of Dissipation Study for CL 263,499 in Canola in Saskatchewan, Canada (CN, 1993), Data Numbering Code: 7.4.1

PMRA Document Number: 921928
Reference: 1996, Imazethapyr (CL 263,499): Freezer Stability of Residues of CL 263,499 and Its Metabolites, CL 288,511 and CL 182,704, in Corn Forage, Grain and Fodder, Data Numbering Code: 7.3

PMRA Document Number: 1469445
Reference: 2001, CL 263,499 (Imazethapyr): Residues of CL 263499 in Canola after a Single Post-Emergence Application of Pursuit 70 DG Herbicide 1999 Trials Conducted in Manitoba and Saskatchewan, Canada, Data Numbering Code: 7.4.1

PMRA Document Number: 1469446
Reference: 2001, CL 263499 (Imazethapyr): Residues of CL 263499 in Imazethapyr-tolerant Canola after a Single Post-emergence Application of Pursuit 2 as Herbicide from a 1999 Trial Conducted in Manitoba Canada, Data Numbering Code: 7.4.1

PMRA Document Number: 1469342
Reference: 2001, Report Amendment 1: Bas 685 H (Imazethapyr): Independent Laboratory Validation of CE Method M 3319 for the Determination of Bas 685 H Residues in Canola Seed, Data Numbering Code: 7.2.2, 7.2.3

PMRA Document Number: 921925
Reference: 2002, Waiver Request for the Exemption from a Freezer Storage Stability Study for Odyssey Herbicide in Lentils, Data Numbering Code: 7.3

PMRA Document Number: 796047
Reference: 2003, Independent Method Validation of Basf Analytical Method M 3519 (draft Dated 25 July 2002) Entitled "Bas 720 H (CL 299263) and Bas 685 H (CL 263499): LC/MS Determinative and LC/MC/MS Confirmatory Method for the Determination and Confirmation of Bas 7

PMRA Document Number: 921920
Reference: 2003, Independent Method Validation of Basf Analytical Method M 3519 (Draft Dated 25-July-2002) Entitled "Bas 720 H (CL 299263) and Bas 685 H (CL 263499): LC/MS/determinative and LC/MS/MS Confirmatory Method for the Determination and Confirmation of Bas 7

PMRA Document Number: 796068
Reference: 2003, Magnitude of Imazethaphyr and its Metabolite Residues (CL 288511 and CL 182704) in Imidazolinone-tolerant Rice Grain and Straw, Data Numbering Code: 7.4.1

PMRA Document Number: 921915
Reference: 2003, Metabolism/Toxicokinetics Summaries, Data Numbering Code: 6.1

PMRA Document Number: 796050
Reference: 2003, Method Validation of Basf Analytical Method D0303 Entitled "Method for the Determination of Bas 720 H (CL 299263) and its Metabolite CL 263284 in Bovine Matrices Using LC/MS/MS", Data Numbering Code: 7.2.2

PMRA Document Number: 921917
Reference: 2003, Waiver Request for the Exemption from a Metabolism Study for Imidazolinone Herbicides in Clearfield Lentils, Data Numbering Code: 6.3

PMRA Document Number: 796056
Reference: 2004, a Meat and Milk Magnitude of the Residue Study with CL 288511 (Reg. No. 4110971); a Metabolite of Bas 685 H, Imazethapyr) in Lactating Dairy Cows, Data Numbering Code: 7.3, 7.5.1

PMRA Document Number: 796051
Reference: 2004, Independent Laboratory Validation (ILV) of Basf Analytical Method M3512 Used for the Determination of Bas 685 H (Imazethapyr) and CL 288511 (Metabolite of Bas 685 H) in Animal Matrices, Data Numbering Code: 7.2.3

PMRA Document Number: 796067
Reference: 2004, Magnitude of Bas 720 H and Bas 685 H and their Related Metabolite Residues in Lentils after Treatment with Bas 724 H, Data Numbering Code: 7.4.1

PMRA Document Number: 796066
Reference: 2004, Method Validation of Basf Analytical Method M 3519 (Draft Dated 25-July-2002) Entitled "Bas 720 H (CL 299263): LC/MS Determinative and LC/MS/MS Confirmatory Method for the Determination and Confirmation of Bas 720 H, CL 263284, CL 189215, CL 312622,

PMRA Document Number: 1373071
Reference: 2004, Minor Use Project Imazethapyr on Peas, Ammended Report March 2004, Data Numbering Code: 7.1

PMRA Document Number: 796048
Reference: 2004, Validation of Basf Analytical Method M3512 Entitled "Bas 685 H (Imazethapyr): LC/MS Determination and LC/MS/MS Confirmatory Method for Bas 685 H and CL 288511 (Metabolite of Bas 685 H) in Crawfish" In Matrices of Animal Origin, Data Numbering Code: 7.2.1, 7.2.2

PMRA Document Number: 1233298
Reference: 5.3 Crop Residue Data, Analysis of Canadian Soybean Samples, Data Numbering Code: 7.4.2

PMRA Document Number: 1146692
Reference: AC 263,499 (Proposed Common Name Imazethapyr) Residues in Peas (2131;9533/86090/83)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1784706
Reference: Imazethapyr Herbicide (CL 263,499): Residues and Metabolism of Carbon-14 Labelled CL 263,499 in Corn (PD-M Volume 27-9;09415;0462)(Pursuit), Data Numbering Code: 6.3 Confidential Business Information

PMRA Document Number: 1784707
Reference: Metabolism Of Carbon-14 Labelled CL263,499 in Peas Under Field Conditions (Met-93-004;m88p499pt1;0951;0187)(Pursuit), Data Numbering Code: 6.3 Confidential Business Information

PMRA Document Number: 1146337
Reference: CL 263,499 (Imazethapyr): Dissipation of CL 263,499, CL 288,511 and CL 182,704 in Pioneer Corn Treated with a Post Application of Pursuit 240as Herbicide (75 and 150g ae/hectare Per Application) (Ontario 1992) (res 93-160;0952;8012)(Pursuit), Data Numbering Code: 7.4.

PMRA Document Number: 1146335
Reference: CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499 CL 288,511 and CL 182,704 in Corn Forage, Silage, Grain and Fodder (c3681;09418;7585;0462)(Pursuit), Data Numbering Code: 7.4.6

PMRA Document Number: 1146334
Reference: CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Corn Forage, Silage Grain and Fodder (c3680;09418;7516;0462)(Pursuit), Data Numbering Code: 7.4.6

PMRA Document Number: 1146336
Reference: CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in Corn Forage, Silage, Grain and Fodder (c3682;09418;7591;0462)(Pursuit), Data Numbering Code: 7.4.6

PMRA Document Number: 1169761
Reference: CL 299,263 and CL 263,499: Residues of CL 299,263, CL 263,284, CL 263,499 and CL 288,511 in Field Pea Forage (Res 96-110;0952)(Odyssey) Final Report, Data Numbering Code: 7.4.2

PMRA Document Number: 1159927
Reference: CL263,499 (Imazethapyr): Dissipation of CL263,499 in Field Peas Treated with a Post Application of Pursuit 240as Herbicide (50 and 100 g/Hectare Per Application)(Manitoba-1992)(Res93-138;0952;pu92cn03;8014;0185), Data Numbering Code: 7.4.2

PMRA Document Number: 1159902
Reference: CL263,499(Imazethapyr/240as): Residues of CL263,499;cl288,511 and Cl182,704 in Alfalfa Forage and Hay (Post;cn;1992)(res93-166;0952;pu92cn04;8011;0533)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1159903
Reference: CL263,499(Imazethapyr/2AS): Residues of CL263,499; CL288,511 and Cl182,704 in Alfalfa Forage and Hay (Post; CN; 1992)(res93-167;0952;pu92cn05;8013;0533)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1159904
Reference: CL263,499(Imazethapyr/2AS): Validation of GC Method M2020 for the Determination of CL263,499 and CL288,511 Residues in Alfalfa Forage, Hay and Seed (c3539;0948;pu90pt14;0184;has309/9-26)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1159905
Reference: CL263,499(Imazethapyr/2AS): Validation of GC Method M2021 for the Determination of Cl182,704 Residues in Alfalfa Forage, Hay and Seed (c3540;0948;pu90pt15;0184;has309/9-27)(Pursuit), Data Numbering Code: 7.4.2

PMRA Document Number: 1159063
Reference: CL288,511: Carbon14 CL288,5511-derived Residues in Blood, Milk and Edible Tissues of Lactating Goats (Pd-m Volume 27-20;m88a511pt2;89jun26;09415;I-2361;0184)(Pursuit), Data Numbering Code: 7.5

PMRA Document Number: 1159907
Reference: CL288,511: Determination of [14C]cl288,511-Derived Residues in Tissues and Milk of the Lactating Dairy Cow (met93-028;m93a511pt1;0951)(Pursuit), Data Numbering Code: 7.5

PMRA Document Number: 1146332
Reference: Imazethapyr Herbicide (CL 263,499): Residues and Metabolism of Carbon-14 Labelled CL 263,499 in Corn (Pd-m Volume 27-9;09415;0462)(Pursuit), Data Numbering Code: 6.3

PMRA Document Number: 1156317
Reference: Imazethapyr: Validation of GC Method M-2186 for the Determination of Cl182,704 Residues in Pea Vine, Hay, Succulent Pod, Straw and Dry Pea (c3787;0952;pu91pt06;0185)(Pursuit), Data Numbering Code: 6.3

PMRA Document Number: 1156316
Reference: Imazethapyr: Validation of GC Method M-2187 for the Determination of CL263,499 and CL288,511 (Hydroxy Metabolite) Residues in Pea Vine, Hay, Succulent Pod, Straw and Dry Pea (c3786;0952;pu91pt04;0185)(Pursuit), Data Numbering Code: 6.3

PMRA Document Number: 1146679
Reference: Metabolism of Carbon-14 Labelled CL263,499 in Peas Under Field Conditions (Met-93-004;m88p499pt1;0951;0187)(Pursuit), Data Numbering Code: 6.3

PMRA Document Number: 796064
Reference: Metabolism of Imidazolinone Herbicides in Tebonnet and Mutant Rice Lines, Data Numbering Code: 6.4

PMRA Document Number: 1226365
Reference: Pursuit (CL 263, 499/ipa-as): Residues of CL 263, 499 in Soybean Green Plant, Soybean Dry Plant & Soybean Seed (PE; Ont, 1984) (c-2851), Data Numbering Code: 7.4.2

PMRA Document Number: 1226366
Reference: Pursuit (CL 263, 499/ipa-as): Residues of CL 263, 499 in Soybean Green Plant, Soybean Dry Plant & Soybean Seed (Post; Ont, 1984) (c-2846), Data Numbering Code: 7.4.2

PMRA Document Number: 1226364
Reference: Pursuit (CL 263, 499/ipa-as): Residues of CL 263, 499 in Soybean Seed (PE; Ont, 1984) (c-2822.1), Data Numbering Code: 7.4.2

PMRA Document Number: 1226362
Reference: Pursuit (CL 263, 499/ipa-as): Residues of CL 263, 499 in Soybean Seed (PE; Ont, 1985) (c-2823.1), Data Numbering Code: 7.4.2

PMRA Document Number: 1226363
Reference: Pursuit (CL 263, 499/ipa-as): Residues of CL 263, 499 in Soybean Seed (Post; Ont, 1984) (c-2826.1), Data Numbering Code: 7.4.2

PMRA Document Number: 1161080
Reference: Pursuit (CL 263,499): Residues of CL 263,499 and CL 288,511 in Canola Seed (Res 95-112;0952) Final Report (Pursuit for Western Canada)(Residue Work to Adjust PHI To 70 Days for Canola), Data Numbering Code: 7.4.2

PMRA Document Number: 1130296
Reference: Summaries Pursuit Herbicide (AC 263,499): Study of the Absorption, Excretion and Metabolism in Rats Receiving an Oral Dose of About 1,000 mg/kg Carbon-14 Labelled AC 263,499, Pyridine-6 Carbon-14 AC 263,499-Drived Residues in Soybeans after Postemergence,

PMRA Document Number: 1230959
Reference: Summary - CL 263,499 (Imazethapyr): Validation of GC Method M-1879 for the Determination of CL 263,499 Residues in Corn Tissues (Grain, Plant and Fodder), Data Numbering Code: 7.1

PMRA Document Number: 1182981
Reference: Table I: Summary of CL 263,499 Residues in Dry Beans (Pinto Beans) and Navy Beans, Data Numbering Code: 7.1

PMRA Document Number: 1056105
Reference: Tables - Summary of Residue Data for Legume Vegetable Group Except Soybean, Summary of Residues in Peas, Summary of Residues in Soybeans, Data Numbering Code: 7.2.1

PMRA Document Number: 921926
Reference: 1991, Freezer Stability of Residues of CL 263,499 and its Metabolites, CL 288,511 and CL 182,704, in Peanuts (Hulls and Nutmeat), Data Numbering Code: 7.3

PMRA Document Number: 921918
Reference: 2003. Food, Feed and Tobacco Summaries, Data Numbering Code: 7.1

PMRA Document Number: 1064078
Reference: 1995, Imazethapyr (CL 263,499): Freezer Stability of Residues of CL 243,499 and its Metabolites, CL 288,511 and CL 182,704 in Alfalfa Forage and Hay, Data Numbering Code: 7.3

PMRA Document Number: 921929
Reference: 2000, CL 263499 (Imazethapyr): Freezer Storage Stability of Residues of CL 263499 and Metabolites CL 288511 and CL 182704 in Rice Straw and Grain, Data Numbering Code: 7.3

PMRA Document Number: 1146484
Reference: CL 263,499 (Imazethapyr/2AS): Residues of CL263,499 and CL 288,511 in Allelix Canola Seed (RES93-186;0952;PU92CN06;8015;0685) (Pursuit for Western Canada), Data Numbering Code: 7.4.2

PMRA Document Number: 1146486
Reference: CL 263499 (Imazethapyr/2AS) Residues of CL 263,499 and CL 288,511 in Allelix Canola Seed (RES93-187;0952;PU92cn07;8045;0533)(Pursuit For Western Canada), Data Numbering Code: 7.4.2

PMRA Document Number: 1469369
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa seed (POST; WA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1146483
Reference: Imazethapyr (CL263,499): Metabolism of Carbon-14 Labelled CL 263,499 in Field Grown Canola (MET93-023;SC920084;M92P499NDL) Final Report (Pursuit for Western Canada), Data Numbering Code: 6.3

PMRA Document Number: 1469478
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa (POST; WI, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469361
Reference: 1992, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa seed (POST; CA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469365
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa seed (POST; CA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469368
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa seed (POST; WA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469370
Reference: 1992, Report Amendment #1; CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa seed (POST; WA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469454
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa (POST; NY, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 1469462
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa (POST; CA, 1990), Data Numbering Code: 7.4.1, 7.4.2

PMRA Document Number: 1469474
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa (POST; SD, 1990), Data Numbering Code: 7.4.1, 7.4.2

PMRA Document Number: 1469482
Reference: 1991, CL 263,499 (Imazethapyr/2AS): Residues of CL 263,499, CL 288,511 and CL 182,704 in alfalfa (POST; IA, 1990), Data Numbering Code: 7.4.1

PMRA Document Number: 796073
Reference: 1990, CL 263,499: Carbon-14 CL 263,499-Derived Residues in Corn Following Postemergence Treatment at 0.25 lbs ae/A, Data Numbering Code: 6.3

Additional Information Considered

Published Information

PMRA Document Number: 1685251
Reference: Moyer J.R., and Esau R., (1996), Imidazolinone Herbicide Effects on Following Rotational Crops in Southern Alberta, *Weed Technology*, Vol. 10, pp 100-106. Data Numbering Code: 7.4.4.

PMRA Document Number: 1685252
Reference: Roberts T.R., Hutson D. H., Jewess P. J., (1998), Metabolic Pathways of Agrochemicals: Herbicides and Plant Growth Regulators, Royal Society of Chemistry (Great Britain), Information Services, pp 372-376. Data Numbering Code: 6.1.

E. Information Considered for the Environmental Risk Assessment

Studies/Info Provided by the Applicant/Registrant (Unpublished)

PMRA Document Number: 1130334
Reference: Summaries - Determination of Ambient Vapor Pressure of CL 263,499, Soil Photolysis, Photolysis of Pyridine Ring-6 Carbon-14 Labelled AC 263, 499 in Aqueous Media, A Laboratory Anaerobic Soil Metabolism Study in Sandy Loam Soil, Validation of Method M-1719.

PMRA Document Number: 1146694
Reference: Summaries: Cl263,499 (Imazethapyr)(Pursuit), Data Numbering Code: 8.1.

PMRA Document Number: 1168682
Reference: Supplemental Information Provided by Cyc in Response to P.Delorme (EAD) Request for Additional Information of July 23 1996 [Imazamox (AC 299,263)/Odyssey (Imazamox + Imazethapyr)](Attachements + Correspondence Together), Data Numbering Code: 8.1.

PMRA Document Number: 1226748
Reference: Imazethapyr (CL 263,499) Summaries: Residues of CL 263, 499 in Soils. 2 Field Studies in Ontario Evaluated Soil Dissipation and Leaching Potential, Data Numbering Code: 8.1.

PMRA Document Number: 1232423
Reference: 1990, Summmaries - Aerobic and Anaerobic Aquatic Metabolism of 14C-AC 263,499, the Active Ingredient in Pursuit Herbicide, Data Numbering Code: 8.1.

PMRA Document Number: 1130264
Reference: 1986, Determination of Ambient Vapor Pressure of CL 263,499. Data Numbering Code: 8.2.1.

PMRA Document Number: 1130265
Reference: 1987, Pursuit Herbicide (AC 263,499): Soil Photolysis, Data Numbering Code: 8.2.1.

PMRA Document Number: 1130266
Reference: 1987, Pursuit Herbicide (AC 263,499): Photolysis of Pyridine Ring-6 Carbon-14 Labeled AC 263,499 in Aqueous Media, Data Numbering Code: 8.2.1.

PMRA Document Number: 1226664
Reference: 1984, AC 263,499: Determination of the Partition Coefficient in N-Octanol/Water Systems, Data Numbering Code: 8.2.1.

PMRA Document Number: 1226731
Reference: 1986, Herbicide AC 263,499: The Determination of Ambient Vapor Pressure of CL 263,499, Data Numbering Code: 8.2.1.

PMRA Document Number: 1130268
Reference: 1987, Pursuit Herbicide (CL 263,499): Validation of Method M-1719 for the Determination of CL 263,499 Residues in Soil, Data Numbering Code: 8.2.2.1.

PMRA Document Number: 1130279
Reference: 1987, Pursuit Herbicide (CL 263,499): Freezer Storage Stability of CL 263,499 Residues in Fortified Samples of Soils (C-2561), Data Numbering Code: 8.2.2.1, 8.5.1.

PMRA Document Number: 1130267
Reference: 1987, Pursuit Herbicide (AC 263,499): A Laboratory Anaerobic Soil Metabolism Study of Pyridine Ring-6 Carbon-14 Labelled AC 263,499 in Sandy Loam Soil., Data Numbering Code: 8.2.3.1.

PMRA Document Number: 1226666
Reference: 1985, Herbicide (CL 263,499): Validation of GC Method M-1501 for the Determination of CL 263,499 Residues in Soil, Data Numbering Code: 8.2.3.1.

PMRA Document Number: 1226746
Reference: 1987, Pursuit Herbicide (AC 263,499): A Laboratory Aerobic Soil Metabolism Study of Pyridine Ring-6 Carbon-14 Labelled AC263,499 in Sandy Loam Soil, Data Numbering Code: 8.2.3.1.

PMRA Document Number: 1231904
Reference: AC 263,499 (Pursuit) Anaerobic Aquatic Metabolism (N-162-3) Revised November 22, 1988, Data Numbering Code: 8.2.3.1.

PMRA Document Number: 1226662
Reference: 1984, AC 263,499: The Hydrolysis of Carbon-14 Labelled AC 263,499 in Pond Water. The Hydrolysis of Carbon-14 Labelled AC 263,499 in Buffered Aqueous Solution. Determination of the Partition Coefficient in N-Octanol/Water Systems. Soil Adsorption and Desorption.

PMRA Document Number: 1231903
Reference: AC-263,499 (Pursuit) Aerobic Aquatic Metabolism (N-162-4) Revised November 22, 1988, Data Numbering Code: 8.2.3.5.2.

PMRA Document Number: 1232424
Reference: 1989, Aerobic Aquatic Metabolism of 14C-AC 263,499, the Active Ingredient in Pursuit Herbicide, ABC37642, Data Numbering Code: 8.2.3.5.2.

PMRA Document Number: 1232425
Reference: 1989, Anaerobic Aquatic Metabolism of 14C-AC 263,499, The Active Ingredient in Purusuit Herbicide, ABC 37641, Data Numbering Code: 8.2.3.5.6.

PMRA Document Number: 1130292
Reference: 1989, Imazethapyr (AC 263,499): Soil Thin-Layer Chromatography, E-89-11, Data Numbering Code: 8.2.4.1.

PMRA Document Number: 1226665
Reference: 1985, AC 263, 499: Soil Adsorption and Desorption of AC 263,499 and a Laboratory Aerobic Soil Metabolism Study of Pyridine Ring-6 Carbon-14 Labelled AC 263,499 in Sandy Loam Soil, Data Numbering Code: 8.2.4.1.

PMRA Document Number: 1130291
Reference: 1989, Imazethapyr (AC 263,499): Soil Thin-Layer Chromatography. Imazethapyr (CL 263,499/240as): Residues of CL 263,499 in Soil (Sandy Loam; Georgetown, Ontario 1987), Data Numbering Code: 8.2.4.4.

PMRA Document Number: 1168338
Reference: CL 299,263: Soil Dissipation Study with CL 299,263 in Michigan. (MI;1994).(Res96-019;0952;Xp94mi01;8272). (Odyssey). American Cyanamid Company, Princeton, New Jersey. Study Finalized: August 15.

PMRA Document Number: 1168349
Reference: CL 299,263: Soil Dissipation Study with CL 299,263 in Iowa.(IA;1993).(Res95-176;0952;Xp93ia01;8100).(Odyssey). Dated: November 27, 1995. American Cyanamid Company, Princeton, New Jersey. Data Numbering Code: 8.3.2.2.

PMRA Document Number: 1168360
Reference: CL 299,263: Soil Dissipation Study with CL 299,263 in North Dakota. (ND;1992).(Res94-155;0952;Xp92nd01;7992;Cy-102).(Odyssey). Report Issued: August 17, 1995.

PMRA Document Number: 1146695
Reference: (Imazethapyr): Residues of CL 263,499 in Soil Located in Southern Saskatchewan (C3790;09418;Pu90cn03;7569;0532)(Pursuit), Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1146696
Reference: (Imazethapyr): Residues of CL 263,499 in soil Located in Central Saskatchewan (C3791;09418;Pu90cn04;7619;0532)(Pursuit), Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1146698
Reference: (Imazethapyr): Residues of CL 263,499 in Soil (Alberta) (C3728;0952; Pu90cn02;7561;0532)(Pursuit), Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1166286
Reference: Outdoor Lysimeter Study of Pendimethalin - Fate and Mobility Study of Herbicide Over 4 Years. Final Report (Cya-O4/7-11; 32401-922-003;Pn-620-027) (October 1989 - September 1994). Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1234046
Reference: mazethapyr (CL 263,499/240as): Residues of CL 263,499 in Soil (PPI; Sandy Loam; Georgetown, Ontario 1988) (C3315), Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1237493
Reference: Residues of CL 263,499 (Imazethapyr) in Soil (PPI: Clay Loam; Georgetown, Ontario 1988) (C3316), Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1190729
Reference: Material Safety Data Sheet, Prepared March 30, 1996 (PCP 22644;16255b) [Odyssey Water Dispersable Herbicide;Subn.#99-0772; Regn.#25111;Submitted April 13, 1999;Volume 1 of 1 Summary], Data Numbering Code: 8.4.1.

PMRA Document Number: 1226206
Reference: Acute Toxicity of AC 263, 499 To *Selenastrum Capricornutum* Printz, 36802, Data Numbering Code: 9.2.1.

PMRA Document Number: 1226685
Reference: Summaries: Acute Toxicity of AC 263, 499 To Bluegill Sunfish, Channel Catfish, Rainbow Trout, *Daphnia magna*, Data Numbering Code: 9.2.1, 9.5.1.

PMRA Document Number: 1226674
Reference: Summaries: Acute Toxicity of AC 263, 499 to Bluegill Sunfish, Channel Catfish, Rainbow Trout, *Daphnia magna*, Data Numbering Code: 9.2.1, 9.5.1.

PMRA Document Number: 1226752
Reference: 1987, Uptake, Depuration and Bioconcentration of 14C-AC 263,499 By Buegill Sunfish (*Lepomis macrochirus*). Subacute Toxicity to Fish and Other Aquatic Organisms, 34643, Data Numbering Code: 9.2.1, 9.5.1.

PMRA Document Number: 1130294
Reference: 1988, The Acute Toxicity (LC50) of AC 263,499 to the Earthworm, CYD 470/881275, Data Numbering Code: 9.2.3.1.

PMRA Document Number: 1226686
Reference: 1985, Summary of Bee Adult Toxicity Dusting Test, AC 263,499, Summary Sheet No. 770, Data Numbering Code: 9.2.4.1.

PMRA Document Number: 1226687
Reference: 1985, Assessment of the Effects of the Herbicide AC 263, 499 on Soil Microorganisms, Data Numbering Code: 9.2.7.

PMRA Document Number: 1226207
Reference: 1988, Acute Toxicity of AC 263, 499 to *Selenastrum Capricornutum* Printz, 36802, Data Numbering Code: 9.3.1, 9.5.2.1.

PMRA Document Number: 1226682
Reference: 1985, Acute Toxicity of AC 263, 499 to *Daphnia magna*, 33059, Data Numbering Code: 9.3.1, 9.5.2.1.

PMRA Document Number: 1226698
Reference: 1987, Chronic Toxicity of 14C-AC 263, 499 to *Daphnia magna* Under Flow-Through Test Conditions, 35076, Data Numbering Code: 9.3.1, 9.5.5.

PMRA Document Number: 1226678
Reference: 1985, Acute Toxicity of AC 263, 499 to Channel Catfish (*Ictalurus punctatus*), 33058, Data Numbering Code: 9.5.2.1.

PMRA Document Number: 1226680
Reference: 1985, Acute Toxicity of AC 263, 499 to Rainbow Trout (*Salmo Gairdneri*), 33057, Data Numbering Code: 9.5.2.1.

PMRA Document Number: 1226753
Reference: 1987, Early Life Stage Toxicity of 14C-AC 263, 499 to Fathead Minnow in a Flow-Through System, 35075, Data Numbering Code: 9.5.2.1.

PMRA Document Number: 1226676
Reference: Static Bioassay Procedure for Determining the Acute Toxicity of Chemical Substances to Freshwater Fish (Bluegill Sunfish), 33056, Data Numbering Code: 9.5.2.1, 9.5.5.

PMRA Document Number: 1226679
Reference: 1985, Static Bioassay Procedure for Determining the Acute Toxicity of Chemical Substances to Freshwater Fish (Channel Catfish), 33058, Data Numbering Code: 9.5.2.1, 9.5.5.

PMRA Document Number: 1226681
Reference: 1985, Static Bioassay Procedure for Determining the Acute Toxicity of Chemical Substances to Freshwater Fish (Rainbow Trout), 33057, Data Numbering Code: 9.5.2.1, 9.5.5.

PMRA Document Number: 1226675
Reference: 1985, Acute Toxicity of AC 263,499 to Bluegill Sunfish, Data Numbering Code: 9.5.2.2.

PMRA Document Number: 1226754
Reference: Uptake, Depuration & Bioconcentration FF 14C-AC 263, 499 by Bluegill Sunfish, 34643, Data Numbering Code: 9.5.5.

PMRA Document Number: 1130281
Reference: Summaries - Toxicity and Reproduction Study with AC 263,499 Technical in Mallard Ducks and Bobwhite Quail. Data Numbering Code: 9.6.1.

PMRA Document Number: 1226668
Reference: Summary: Results of 21-Day Acute Oral Toxicity Study Conducted with AC 263,499 in Bobowhite Quail, Data Numbering Code: 9.6.1.

PMRA Document Number: 1226669
Reference: 1985, Avian Acute Oral Toxicity Study with AC 263, 499 in Bobwhite Quail (85qd54), Blal No. 85 Qd 54, Data Numbering Code: 9.6.2.1.

PMRA Document Number: 1226670
Reference: 1985, Acute Oral Toxicity Study with AC 263, 499 in Mallard Ducks, Blal No. 85 Dd 28, Data Numbering Code: 9.6.2.1.

PMRA Document Number: 1226671
Reference: 1985, 8-Day Dietary LC50 Study with AC 263, 499 In Bobwhite Quail, Blal No. 85 Qc 53, Data Numbering Code: 9.6.2.1.

PMRA Document Number: 1226673
Reference: 1985, 8-Day Dietary LC50 Study with AC 263, 499 In Mallard Ducklings, Blal No. 85 Dc 54, Data Numbering Code: 9.6.2.1.

PMRA Document Number: 1130282
Reference: 1987, Toxicity and Reproduction Study with AC 263,499 Technical in Mallard Ducks, 86 Dr 11, Data Numbering Code: 9.6.2.2, 9.6.3.2.

PMRA Document Number: 1130283
Reference: 1987, Toxicity and Reproduction Study with Ac 263,499 Technical in Bobwhite Quail, 86 Qr 12, Data Numbering Code: 9.6.2.4, 9.6.3.1.

PMRA Document Number: 1142242
Reference: 1991, The Toxicity of AC 263,499 to *Lemna gibba* G3 (Tier 2 Growth and Reproduction of Aquatic Plants), B400-15-1, Data Numbering Code: 9.8.2.

PMRA Document Number: 1583187
Reference: 1985, Herbicide AC 263, 499: The Hydrolysis of Carbon-14 labelled AC 263,499 in Buffered Aqueous Solutions; Cyanamid, Report No. PD-M, vol. 22-41. 22 pp. Data Numbering Code: 8.2.3.2.

PMRA Document Number: 1130293
Reference: 1989. Imazethapyr (CL 263,499/240AS): Residues of CL 263,499 in soil (PE; Sandy Loam; Georgetown, Ontario 1987. Cyanamid, Report No. C3201. 114 p. Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1226663
Reference: 1984. AC 263,499: The Hydrolysis of Carbon-14 Labeled AC 263,499 in Pond Water. Cyanamid, Report No. PD-M, Vol. 11-12. 23 p, Data Numbering Code: 8.2.3.2.

PMRA Document Number: 1226749
Reference: 1988. Imazethapyr Herbicide (CL 263,499): Residues of CL 263,499 in Soil (PRE: Ontario, Canada, 1984 (C-2951), Cyanamid, Report No. C-3052. 49 p. Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1226750
Reference: 1988. Imazethapyr Herbicide (CL 263,499): Residues of CL 263,499 in Soil (POST: Ontario, Canada, 1984 (C-2951), Cyanamid, Report No. C-3053. 52 p. DA Data Numbering CodeCO: 8.3.2.3.

PMRA Document Number: 1130276
Reference: 1987. Pursuit® Herbicide (CL 263,499): Residues of CL 263,499 in Soil (PPI; IA, 1985) (C-2951), Cyanamid, Report No. C-3006. 31 p. Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1130277
Reference: 1987. Pursuit® Herbicide (CL 263,499): Residues of CL 263,499 in Soil (PRE; IA, 1985) (C-2951), Cyanamid, Report No. C-3008. 29 p. Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1130278
Reference: 1987. Pursuit® Herbicide (CL 263,499): Residues of CL 263,499 in Soil (POST; IA, 1985) (C-2951), Cyanamid, Report No. C-3009. 29 p. Data Numbering Code: 8.3.2.3.

PMRA Document Number: 1639348
Reference: 1999. Tier 2 Nontarget Terrestrial Plant Vegetative Vigor Phytotoxicity Study Using AC 263499 (Imazethapyr) in a 2.0 Pound Per Gallon of Aqueous Solution with Urea (2 ASU) Formulation. Cyanamid. Report No. ECO 98-115. 333 P. Data Numbering Code: 9.8.6.

PMRA Document Number: 1639350
Reference: 1999. Tier 2 Nontarget Terrestrial Plant Seedling Emergence Phytotoxicity Study Using AC 263499 (Imazethapyr) in a 2.0 Pound Per Gallon of Aqueous Solution with Urea (2 ASU) Formulation. Cyanamid. Report No. ECO 98-114. 318 P. Data Numbering Code: 9.8.6.

PMRA Document Number: 1468480
Reference: 1999. Toxicity of AC 263499 Technical (Imazethapyr) During the Early Life-Stage of the Fathead Minnow (*Pimephales Promelas*). American Cyanamid Company, Report No. ECO 98-151. 99 P. Data Numbering Code: 9.5.3.1.

PMRA Document Number: 1469553
Reference: 2000. Acute Toxicity of a 2ASU Formulation of AC 263499 (Imazethapyr) to *Daphnia Magna* Under Flow-Through Test Conditions. American Cyanamid Company. Report ECO 98-155. 67 P. Data Numbering Code: 9.3.5.

Pmra Document Number: 1468472
Reference: 1999. Toxicity of Ac 263499 Technical (Imazethapyr) During the Life-Cycle of the Cladoceran (*Daphnia Magna*). American Cyanamid Company. Report No. Eco 98-152. 94 P. Data Numbering Code: 9.3.3.

Pmra Document Number: 1468473
Reference: 2000. Acute Toxicity of Ac 263499 Technical (Imazethapyr) to Saltwater Mysid (*Mysidopsis Bahia*) Under Static-Renewal Test Conditions. American Cyanamid Company. Report No. Eco 98-149. 68 P. Data Numbering Code: 9.4.2.

Pmra Document Number: 1468474
Reference: 2000. Acute Toxicity of Ac 263499 Technical (Imazethapyr) to the Eastern Oyster (*Crassostrea Virginica*) Under Static-Renewal Test Conditions. American Cyanamid Company. Report No. Eco 98-150. 68 P. Data Numbering Code: 9.4.4.

Pmra Document Number: 1468478
Reference: 2000. Acute Toxicity of Ac 263499 Technical (Imazethapyr) to Sheepshead Minnow (*Cyprinodon Variegatus*) Under Static-Renewal Test Conditions. American Cyanamid Company. Report No. Eco 98-148. 68 P. Data Numbering Code: 9.5.2.4.

Pmra Document Number: 1469557
Reference: 2000. Effect of A 2asu Formulation of Ac 263499 (Imazethapyr) on Growth of the Marine Diatom, Skeletonema Costatum. American Cyanamid Company. Report No. Eco 98-147. 71 P. Data Numbering Code: 9.8.6.

Pmra Document Number: 1468490
Reference: 2000. Avian Reproduction Test with Imazethapyr (Ac 263499 Technical) in Mallard Duck (Anas Platyrhynchos). American Cyanamid Company. Report No. Eco 98-117.01. 160 P. Data Numbering Code: 9.6.3.1.

Pmra Document Number: 1468487
Reference: 2000. Avian Reproduction Test with Imazethapyr (Ac 263499 Technical) in Northern Bobwhite (Colinus Virginianus). American Cyanamid Company. Report No. Eco 98-116. 172 P. Data Numbering Code: 9.6.3.1.

Additional Information Considered

Published Information

PMRA Document Number: 1682768
Reference: Aichelle, T.M. and Penner, D. 2005. Adsorption, Desorption and Degradation of Imdazolinones in Soil. Weed technology. Vol 19. Pp. 154-159. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1725339
Reference: Barkani, H., Emmelin, C., Elazzouzi, M., Montacer, H., Paisse, O. and Chovelon, J.M. 2005. Étude De La Dégradation Photochimique En Phase Aqueuse De L'imazethapyr. Influence Des Acides Humiques. Presentation, 35ème Congrès Du Groupe Français Des Pesticides. University of Marne-La-Vallée, Paris-Est, France. 7 p. Data Numbering Code: 8.2.3.3.2

PMRA Document Number: 1682770
Reference: Bresnahan, G.A., Koskinen, W.C., Dexter, A.G., and Lueschen, W.E. 2000. Influence of Soil-pH-sorption Interactions on Imazethapyr Carry-over. J.Agric. Food. Chem. Vol. 48. p. 1929-1934. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1711774
Reference: Cantwell, J.R., Liebl, R.A. and Slife, F.W. 1989. Biodegradation Characteristics of Imazaquin and Imazethapyr. Weed Science. Vol.37. pp.815-819. Data Numbering Code: 8.2.3.4.2

PMRA Document Number: 1682764
Reference: Curran, W.S., Loux, M.M., Liebl, R.A. and Simmons, F.W. 1992. Photolysis of Imidazolinone Herbicides in Aqueous Solution and on Soil. Weed Science. Vol.40. pp. 143-148. Data Numbering Code: 8.2.3.3.1, 8.2.3.3.2

PMRA Document Number: 1682773
Reference: De Avila, L.A. 2005. Imazethapyr: Red Rice Control and Resistance, and Environmental Fate. PhD Thesis, Texas A and M University. USA. 81 p. Data Numbering Code: 8.2.3.3.2, 8.2.4.2

PMRA Document Number: 1732087
Reference: Flint, J.L., Zeleznik, J.M. and Witt, W.W. 1989. Miscible Displacement of Imazethapyr in Two Kentucky Soils. in: Proceedings Southern Weed Science Society, Nashville, TN, USA. Vol. 42. p.343. Data Numbering Code: 8.6

PMRA Document Number: 1682376
Reference: Gan, J., Weimer, M.R., Koskinen, W.C., Buhler, D., Wyse, D.L. and Becker, R.L. 1994. Sorption and Desorption of Imazethapyr and 5-Hydroxymazethapyr in Minnesota Soils. Weed Science. Vol.42. pp. 92-97. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1682377
Reference: Gennari, M., Nègre, M. and Vindrola, D. 1998. Adsorption of the Herbicides Imazapyr, Imazethapyr and Imazaquin on Soils and Humic Acids. J. Environ. Sci. Health. Vol. B33 (5), pp. 547–567. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1682767
Reference: Goetz, A.J., Lavy, T.L. and Gbur E.E. 1990. Degradation and Field Persistence of Imazethapyr. Weed Science. Vol.38. pp.421-428. Data Numbering Code: 8.2.3.3.1, 8.2.3.4.2

PMRA Document Number: 1732086
Reference: Jensen, K.I.N., Ivany, J.A. and King, R.R. 1995. Persistence of Imazethapyr in Two Atlantic Canada soils. Can. J. Soil Sci. Vol. 75. pp. 525-527. Data Numbering Code: 8.6

PMRA Document Number: 1682378
Reference: Loux, M.M., Liebl, R.A. and Slife, F.W. 1989. Adsorption of Imazaquin and Imazethapyr on Soils, Sediments and Selected Adsorbents. Weed Science. Vol. 37. pp. 712-718. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1682379
Reference: Loux, M.M., Liebl, R.A. and Slife, F.W. 1989. Availability and Persistence of Imazaquin, Imazethapyr and Clomazone in Soil. Weed Science. Vol. 37. pp. 259-267. Data Numbering Code: 8.6

PMRA Document Number: 1732085
Reference: Mangels, G. 1991. Behavior of the Imidazolinone Herbicide in Soil – a Review of the Literature. in D.L. Shaner and S.L. O'Connor, eds. The Imidazolinone Herbicides. CRC Press, Boca Raton, FL. Pages 191-210. Data Numbering Code: 8.6

PMRA Document Number: 1682380
Reference: Mills, J.A. and Witt, W.W. 1989. Efficacy, Phytotoxicity and Persistence of Imazaquin, Imazethapyr and Clomazone in No-till Double-crop Soybean (*Glycine max*). Weed Science. Vol. 37. pp.353-359. Data Numbering Code: 8.6

PMRA Document Number: 1682769
Reference: Oliveira, R.S. Jr., Koskinen, W.C. and Ferreira, F.A. 2001. Sorption and Leaching Potential of Herbicides on Brazilian Soils. Weed Research. Vol. 41. pp.97-110. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1682381
Reference: Renner, K.A., Meggitt, W.F. and Penner, D. 1988. Effect of Soil pH on Imazaquin and Imazethapyr Adsorption to Soil and Phytotoxicity to Corn (*Zea mays*). Weed Science. Vol. 36. pp. 78-83. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1682772
Reference: Stougaard, R.N., Shea, P.J. and Martin, A.R. 1990. Effect of Soil Type and pH on Adsorption, Mobility, and Efficacy of Imazaquin and Imazethapyr. Weed Science. Vol. 38. pp. 67-73. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1682382
Reference: UK Department for Environmental, Food and Rural Affairs. 1996. Evaluation on Imazethapyr. Report No. 149. Food and Environment Protection Act, 1985, Part III. Pesticide Safety Directorate, Mallard House, Kings Pool, UK. 74 p. Data Numbering Code: 12.5.8, 12.5.9

PMRA Document Number: 1682771
Reference: Weber, J.B., Wilkerson, G.G. and Reinhardt, C.F. 2004. Calculating Pesticide Sorption Coefficients (Kd) Using Selected Soil Properties. Chemosphere. Vol. 55. pp 157-166. Data Numbering Code: 8.2.4.2

PMRA Document Number: 1732084
Reference: Weed Science Society of America (WSSA), 2002. The Herbicide Handbook, W.K. Vencill Ed. 8th edition. WSSA, Kansas, USA. pp 256-258. Data Numbering Code: 8.6

PMRA Document Number: 1685253
Reference: Zelesnik, J.M., Flint, J.L. and Witt, W.W. 1992. Leaching of Imazethapyr within Two Horizons of a Kentucky Soil. Weed Science Society of America Abstracts. Vol. 32. p. 1003. Data Numbering Code: 8.2.4.3.2

PMRA Document Number: 1311118
Reference: Anderson, A.-M. (2005) Overview of Pesticide Data in Alberta Surface Waters Since 1995. Environmental Monitoring and Evaluation Branch, Alberta Environment. 172 pp. Data Numbering Code: 8.6

PMRA Document Number: 1566596
Reference: Battaglin, W.A., E.T. Furlong, M.R. Burkhardt and C.J. Peter (2000) Occurrence of Sulfonylurea, Sulphonamide, Imidazolinone, and Other Herbicides in Midwestern Rivers, Reservoirs and Groundwater, 1998. The Science of the Total Environment 248 (2-3):123-133. Data Numbering Code: 8.6

PMRA Document Number: 1311142
Reference: Byrtus, G., K. Pongar, C. Browning, R. Burland, E. McGuinness, and D. Humphries (2004) A Summary of Pesticide Residue Date from the Alberta Treated Water Survey, 1995-2003. Alberta Environment, Environmental Assurance Service. Edmonton. 57 pp. Data Numbering Code: 8.6

PMRA Document Number: 1398451
Reference: Giroux, I., C. Robert, and N. Dassylva (2006) Présence de Pesticides dans L'eau au Québec: Bilan dans des Cours D'eau de Zones en Culture de Maïs et de Soya en 2002, 2003 et 2004, et dans les Réseaux de Distribution D'eau Potable. Ministère du Développement Durable, de l'Environnement et des Parcs, Direction du Suivi de L'état de L'environnement, Direction des Politiques de L'eau et Centre D'expertise en Analyse Environnementale du Québec. ISBN 2-550-46504-0, Envirodoq n°ENV/2006/013, collection n° QE/00173, 57 pages + 5 appendices. Data Numbering Code: 8.6

PMRA Document Number: 1660533
Reference: NAWQA (2007) The USGS National Water Quality Assessment Program (NAWQA) Summary Data for Pesticide Occurrence and Concentrations in Ground Water from Agricultural and Urban Wells, as Well As 31 Integrator Sites on Large Rivers and Streams. Downloaded 2008. Data Numbering Code: 8.6

Unpublished Information

PMRA Document Number: 1311107
Reference: 2004, Water Monitoring Data Collected in Reservoirs of the Prairie Region (2003 - 2004). Pesticide Science Fund. Data Numbering Code: 8.6

PMRA Document Number: 1311110
Reference: 2004, Presence, Levels and Relative Risks of Priority Pesticides in Selected Canadian Aquatic Ecosystems. An Environment Canada Pesticide Science Fund Project. Year 1 (2003/04) Annual Report. Data Numbering Code: 8.6

PMRA Document Number: 1311111
Reference: 2005, Pesticide Science Fund Annual Report 2004-2005. (Water, Air, Plants, Mammals and Amphibians; and Fish and Birds). Data Numbering Code: 8.6

PMRA Document Number: 1311112
Reference: 2004, National Water Monitoring Data. Pesticide Science Fund. Data Numbering Code: 8.6

PMRA Document Number: 1311116
Reference: 2004, Water Monitoring Data Collected in Wetlands of the Prairie Region (2004). Pesticide Science Fund. Data Numbering Code: 8.6

PMRA Document Number: 1357366
Reference: 2005, Water Monitoring Data Collected from Great Lakes Areas of Concern and Small Streams in the Niagara and Burlington Area (2003). Part of the Pesticide Science Fund. Environment Canada. Data Numbering Code: 8.6

PMRA Document Number: 1357368
Reference: 2005, Water Monitoring Data Collected from Great Lakes Area of Concern and Great Lakes Connecting Channels (2002). Data Numbering Code: 8.6

PMRA Document Number: 1357369
Reference: 2005, Water Monitoring Data Collected From Lake Huron Tributaries (2002). Environment Canada. Data Numbering Code: 8.6

PMRA Document Number: 1403269
Reference: 2006, Pesticide Science Fund Annual Report 2005-2006. Draft report. Prepared in Fulfilment to Treasury Board Commitments by Environment Canada. Data Numbering Code: 8.6

PMRA Document Number: 1650553
Reference: 2008, Treated and Raw Water Monitoring Data (1995-2007) for 2,4-DB, Clopyralid, Chlorothalonil, Iprodione, Imazethapyr, Linuron and MCPB from Alberta Environment. Data Numbering Code: 8.6

PMRA Document Number: 1660316
Reference: 2008, Water modelling of imazethapyr. Environmental Assessment Directorate, PMRA, Health Canada, 5 p.